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PATENT SPECIFICATION



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457,394

Complete Specification Left : June 29, 1936.

Complete Specification Accepted : Nov. 27, 1936.

PROVISIONAL SPECIFICATION

Improvements relating to Vacuum Cleaners

I, ERIC JONES, M.Sc., of 10, Clowes Street, Withington, Manchester, a British Subject, do hereby declare the nature of this invention to be as follows:

5 This invention relates to vacuum cleaners and has for its object to provide simple and efficient means which will enable the nozzle through which suction is applied to the carpet or the like being
10 cleaned, to pick up fluff, hair and the like which has a tendency to adhere to the carpet surface and escape removal when nozzles of usual form and construction are employed.

15 My invention comprises the provision of means which cause automatically a variation in the width of the nozzle orifice as the nozzle is moved backwards and forwards over the material or surface
20 being cleaned so as to provide for a concentration of the suction upon a smaller area in one direction of movement of the nozzle than in the other.

25 My invention further comprises the provision of means which raise the nozzle slightly from the surface over which the nozzle is traversed when the width of said nozzle is automatically reduced so that the suction tends to draw air over
30 such surface at high velocity and thus entrain and remove any fluff, hair or like particles adhering to such surface.

35 In one convenient application of my invention the nozzle may comprise two cylindrical co-axial parts capable of turning one within the other. The inner

part is secured to the handle or the like by which the nozzle is traversed whilst the outer part has rubber or other rings thereon which engage the surface over
40 which the nozzle is passed. The inner part provides one side or wall of the nozzle orifice and the outer part the other side or wall of said orifice. As therefore the nozzle is traversed, the outer part will
45 turn upon the inner, reducing the width of the orifice in one direction of movement and increasing it in the other.

The surfaces of the friction rings may be eccentric with relation to the nozzle
50 axis so that when the nozzle is reduced in width, it is also raised slightly and thus the air passing into the nozzle is drawn over the surface of the carpet or the like being cleaned instead of through the car-
55 pet as it is when the nozzle is of its normal width and applied close to the carpet or the like.

My invention may be applied to a flat type of nozzle wherein one side of the
60 orifice may be hingedly mounted in position and caused to move towards and away from the other side during the back and forth traverses of the nozzle.

If desired one wall of the nozzle may
65 project more into the surface being cleaned than the other wall. The former wall may be on the fixed part of the nozzle.

Dated this 20th day of May, 1935.

MARKS & CLERK.

COMPLETE SPECIFICATION

Improvements relating to Vacuum Cleaners

70 I, ERIC JONES, M.Sc., of 10, Clowes Street, Withington, Manchester, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by
75 the following statement:—

This invention relates to vacuum cleaners and has for its object to provide simple and efficient means which will
80 enable the nozzle through which suction is applied to the carpet or the like being cleaned, to pick up fluff, hair and the like which has a tendency to adhere to the

carpet surface and escape removal when nozzles of usual form and construction
85 are employed.

A suction nozzle of a vacuum cleaner has been proposed in which the size of the nozzle opening can be reduced at will by making a manual adjustment.
90

My invention comprises the provision of means which cause automatically a variation in the width of the nozzle orifice as the nozzle is moved backwards and forwards over the material or surface being
95 cleaned, so as to provide for a concentration of the suction upon a smaller area

[Pri

in one direction of movement of the nozzle than in the other.

My invention further comprises the provision of means which raise the nozzle slightly from the surface over which the nozzle is traversed when the width of said nozzle is automatically reduced, so that the suction tends to draw air over such surface at high velocity and thus entrain and remove any fluff, hair or like particles adhering to such surface.

Referring to the accompanying sheet of explanatory drawings:—

Figure 1 is a front elevation and Figure 2 an inverted plan view of a vacuum cleaner nozzle constructed in one convenient form in accordance with this invention.

Figure 3 is a sectional side elevation on the line A B of Figure 1.

Figure 4 is a vertical side elevation on the line C D of Figure 1.

The front portion *a* of the nozzle *b* of the vacuum cleaner is hinged to the body of the nozzle at *c* and a torsion spring *d* around the hinge pin tends to keep the said front portion in its normal position as shown in full lines in Figure 3.

The portion *a* which constitutes a flap, has a section between *x* and *y* Figure 1 formed with a V edge *e* to come against the surface being cleaned. The remainder of the edge of the flap which comes against the surface being cleaned is substantially rectangular as shown in Figure 3. The effect of the edge construction is that when the flap moves towards the fixed side *f* of the nozzle, the rectangular part of the edge contacts with the fixed side but a gap is left between the V edge and said fixed side as shown in Figure 3 and the suction is concentrated at such gap so giving an enhanced cleaning action over a shorter length and narrower width of nozzle.

The outer edge *g* of the rectangular portion of the flap occupies a lower position when the flap is in the dotted line position, Figure 3, to that which it occupies when in the full line position. In the lowered position, the part *g* tends to hold the V edge above and clear of the surface being cleaned so that there is a high velocity air flow over the surface being cleaned into the reduced effective length of nozzle which ensures the entrainment and removal of any fluff, hair or like particles adhering to the surface.

To minimise leakage into the suction space of the nozzle around the hinge pin, I provide snugs *h*, *h*¹ which make contact with the nozzle body at the hinge when the flap is in its two operative positions. The said snugs also form stops.

The interior of the fixed part of the

nozzle is provided with a ridge *i* with which the sloping edges of the flap make contact when the flap is in its dotted line position (Figure 3) so as to prevent air flow over such sloping edges.

It will be understood that when the nozzle is being pushed towards the left in Figure 3, the flap moves to the dotted line position. The flap might however be arranged at the opposite side of the nozzle so that it closes towards the fixed side when the nozzle is being drawn towards the user.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a vacuum cleaner, the provision of means which cause automatically a variation in the width of the nozzle orifice as the nozzle is moved backwards and forwards over the material or surface being cleaned so as to provide for a concentration of the suction upon a smaller area in one direction of movement of the nozzle than in the other.

2. In a vacuum cleaner as claimed in claim 1, the provision of a hinged flap upon the nozzle which moves towards a fixed wall or side of the nozzle when the latter is propelled in one direction in order to restrict the area subjected to vacuum.

3. In a vacuum cleaner as claimed in claim 2, the arrangement wherein the flap when it moves towards the fixed wall or side of the nozzle makes contact with such wall or side for a part of its length so that the area exposed to suction is then shorter and narrower.

4. In a vacuum cleaner as claimed in claim 3, the arrangement wherein the lower edge of the flap when in its position of displacement raises the part of the edge exposed to suction above the surface being cleaned for the purpose specified.

5. In a vacuum cleaner as claimed in claim 2, the provision of snug like parts at the flap hinge to make contact with the nozzle body in the two operative positions of the flap in order to minimise air leakage into the suction space.

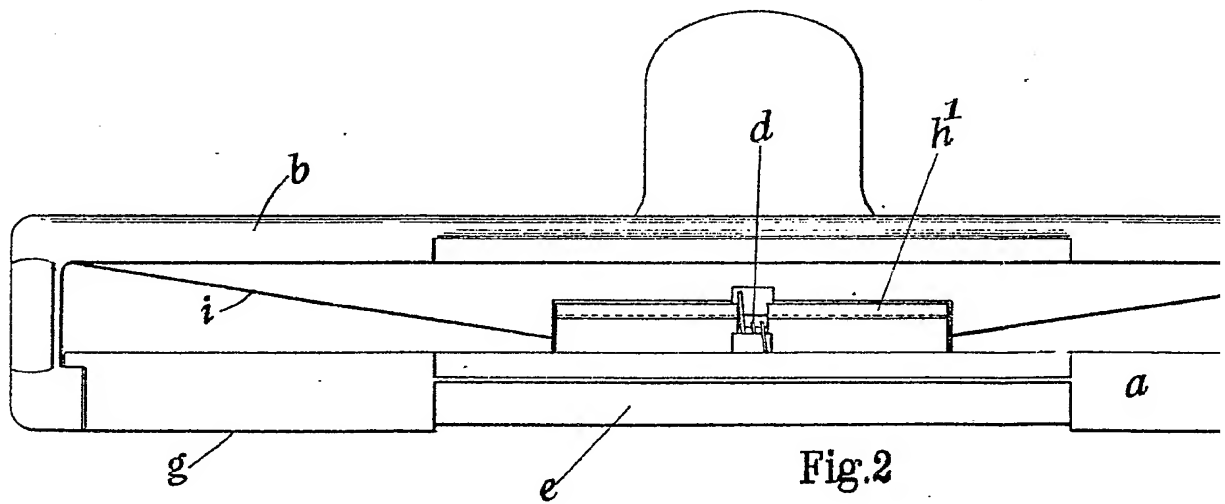
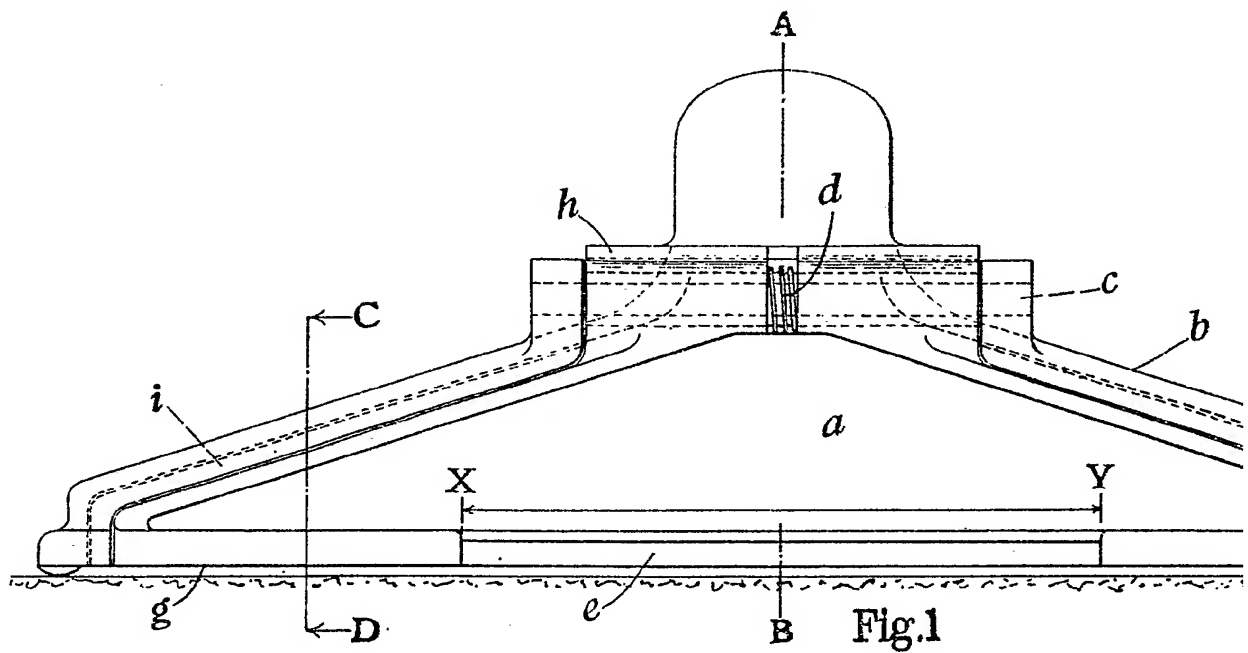
6. In a vacuum cleaner as claimed in claim 2, in which the flap has sloping sides, the provision in the nozzle body of a ridge with which said sides make contact to minimise air flow into the vacuum space over such sides when the flap is displaced towards the fixed wall or side of the nozzle.

7. The improved vacuum cleaner nozzle, substantially as described and as illustrated in the accompanying drawings.

Dated this 25th day of June, 1936.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]



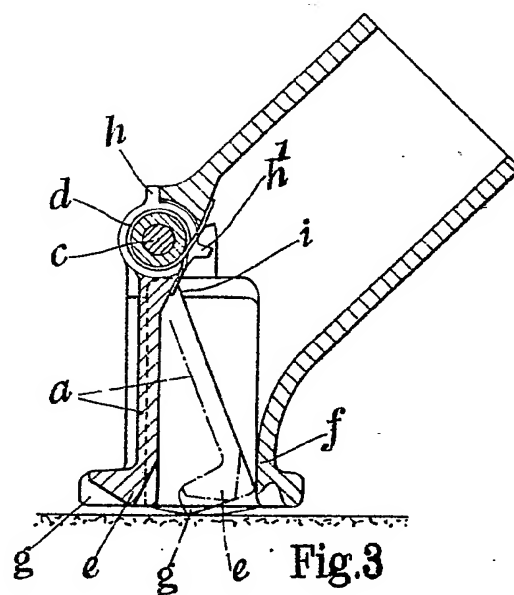
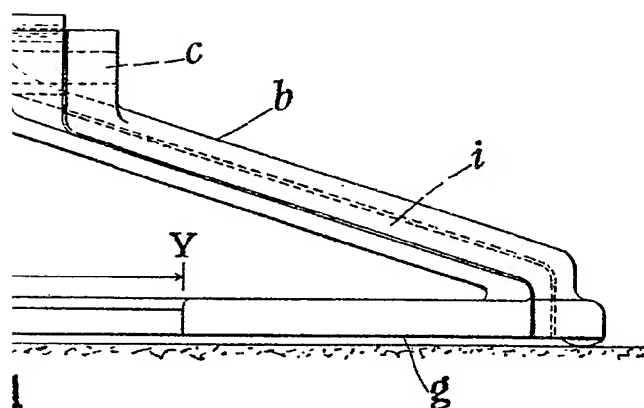


Fig. 3

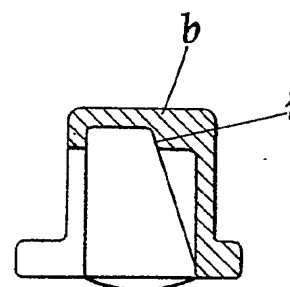
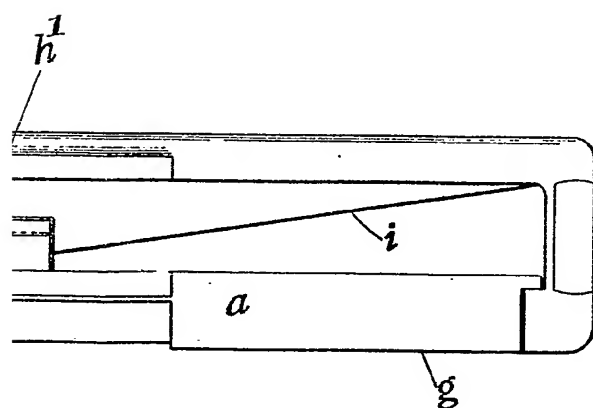


Fig. 4

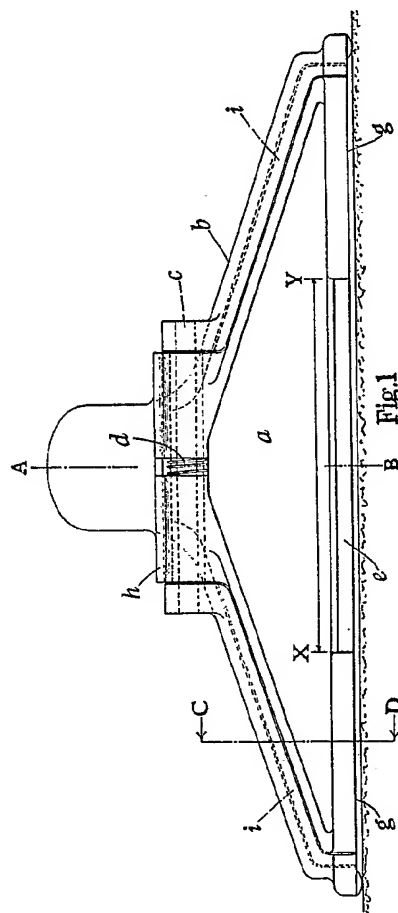


Fig. 1

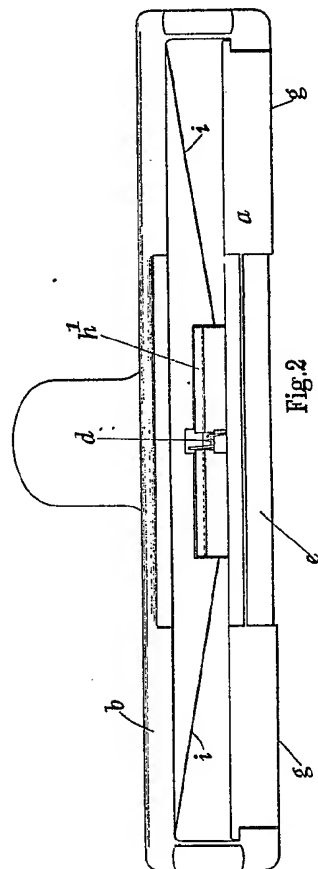


Fig. 2

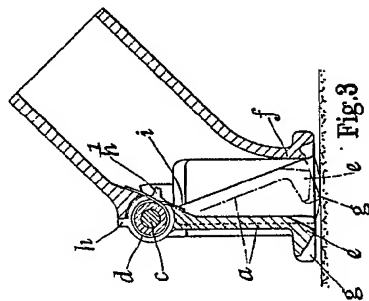


Fig. 3

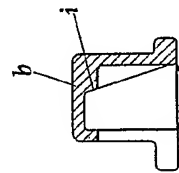


Fig. 4

[This Drawing is a reproduction of the Original on a reduced scale.]